

WHAT IS CLAIMED IS:

1 1. A method of controlling a motor vehicle with an
2 automated clutch, with an engine that is actuated by an engine
3 control device, with an actuator-controlled automated
4 transmission, and with at least one electronic control device
5 for actuating the transmission and the clutch, the method
6 including the steps of:
7 - detecting a quantity that is at least representative of a
8 traveling speed of the vehicle,
9 - detecting an actuation of at least one of a brake and a
10 fuel-metering element,
11 - detecting an operating state of the engine,
12 - taking the clutch out of engagement if the engine is found
13 to be running while the vehicle is found to be traveling at
14 a speed greater than a threshold value, and if at the same
15 time neither the brake pedal nor the fuel-metering element
16 is found to be actuated, and
17 - subsequently re-engaging the clutch if at least one of the
18 brake pedal and the fuel-metering element is found to be
19 actuated,
20 wherein prior to said re-engaging of the clutch, a
21 transmission input rpm-rate is determined, and an engine rpm-

22 rate is controlled in such a manner that said engine rpm-rate
23 and said transmission input rpm-rate are brought towards a
24 closer agreement.

1 2. The method of claim 1, wherein the engine rpm-rate
2 is brought into closer agreement with the transmission input
3 rpm-rate by setting an rpm-target for the engine control
4 device.

1 3. The method of claim 2, wherein the rpm-target for
2 the engine control device is set by the electronic control
3 device, and wherein the engine control device brings the
4 engine rpm-rate into closer agreement with the rpm-target by
5 controlling a fuel flow rate to the engine.

1 4. The method of claim 1, wherein the engine rpm-rate
2 is brought into closer agreement with the transmission input
3 rpm-rate through a control intervention directed at an output
4 torque of the engine.

1 5. The method of claim 4, wherein said control
2 intervention is effected through the steps that:
3 - the at least one electronic control device sets an engine

4 torque control target for the engine control device,
5 - the engine control device adjusts the engine torque
6 according to said control target, and
7 - the control target is varied over time during said
8 adjustment in such a manner that the engine rpm-rate is
9 brought into agreement with the transmission input rpm-
10 rate.

1 6. The method of claim 1, wherein the re-engaging of
2 the clutch takes place after the engine rpm-rate and the
3 transmission input rpm-rate are in agreement.

1 7. The method of claim 1, wherein the re-engaging of
2 the clutch is started after the engine rpm-rate and the
3 transmission input rpm-rate are in agreement.

1 8. The method of claim 6, wherein the re-engaging of
2 the clutch is performed at a maximum speed of engagement.

1 9. The method of claim 6, wherein said agreement is
2 considered to be met if the engine rpm-rate and the
3 transmission input rpm-rate are within 5% of each other.

1 10. The method of claim 6, wherein said agreement is
2 considered to be met if the engine rpm-rate and the
3 transmission input rpm-rate are within 50 rpm of each other.

1 11. The method of claim 6, wherein a criterion for
2 considering said agreement to be met depends on a rate of
3 change of the engine rpm-rate.

1 12. The method of claim 6, wherein said agreement is
2 considered to be met if the engine rpm-rate equals or exceeds
3 the transmission input rpm-rate.

1 13. The method of claim 4, wherein after the re-
2 engaging of the clutch an indicated level of engine torque at
3 which the control intervention was performed is cut back by
4 lowering a fuel flow rate to the engine.

1 14. The method of claim 1, wherein if the actuation
2 of the brake is detected, the re-engaging of the clutch takes
3 place before the engine rpm-rate and the transmission input
4 rpm-rate are in agreement.

1 15. The method of claim 1, wherein if the actuation

2 of the fuel-metering device is detected, the re-engaging of
3 the clutch takes place when or after the engine rpm-rate and
4 the transmission input rpm-rate are in agreement

1 16. A method of controlling a motor vehicle with an
2 automated clutch, with an engine that is actuated by an engine
3 control device, with an actuator-controlled automated
4 transmission, and with at least one electronic control device
5 for actuating the transmission and the clutch, the method
6 including the steps of:

7 - detecting a quantity that is at least representative of a
8 traveling speed of the vehicle,
9 - detecting an actuation of at least one of a brake and a
10 fuel-metering element,
11 - detecting an operating state of the engine,
12 - taking the clutch out of engagement if the engine is found
13 to be running while the vehicle is found to be traveling at
14 a speed greater than a threshold value, and if at the same
15 time neither the brake pedal nor the fuel-metering element
16 is found to be actuated, and
17 - immediately beginning to re-engage the clutch if the brake
18 pedal is found to be actuated.

1 17. A method of controlling a motor vehicle with an
2 automated clutch, with an engine that is actuated by an engine
3 control device, with an actuator-controlled automated
4 transmission, and with at least one electronic control device
5 for actuating the transmission and the clutch, the method
6 including the steps of:

7 - detecting a quantity that is at least representative of a
8 traveling speed of the vehicle,
9 - detecting an actuation of at least one of a brake and a
10 fuel-metering element,
11 - detecting an operating state of the engine,
12 - taking the clutch out of engagement if the engine is found
13 to be running while the vehicle is found to be traveling at
14 a speed greater than a threshold value, and if at the same
15 time neither the brake pedal nor the fuel-metering element
16 is found to be actuated, and
17 - while the clutch is disengaged, setting the transmission
18 into a neutral position.

1 18. The method of claim 17, wherein after the
2 transmission has been set into the neutral position, a volume-
3 equalizing process is allowed to take place in a hydraulic
4 circuit of the motor vehicle.

1 19. The method of claim 18, wherein the clutch
2 remains engaged for a selectable time period while said
3 volume-equalizing process is taking place.

1 20. The process of claim 17, wherein a current
2 transmission ratio that is engaged prior to setting the
3 transmission into the neutral position is stored in a memory
4 of the electronic control unit.

1 21. The method of claim 20, wherein while the clutch
2 is disengaged and the transmission is in the neutral position,
3 the stored transmission ratio is re-engaged.

1 22. The method of claim 18, wherein the clutch is re-
2 engaged after the transmission has been set into the neutral
3 position and wherein the volume-equalizing process is
4 performed only after a selectable time period has elapsed
5 following said re-engagement of the clutch.

1 23. The method of claim 20, wherein if the motor
2 speeds up after the clutch has been disengaged and the
3 transmission has been set into the neutral position, a higher

4 transmission ratio than has been stored in memory is set in
5 the transmission.

1 24. A method of controlling a motor vehicle with an
2 automated clutch, with an engine that is actuated by an engine
3 control device, with an actuator-controlled automated
4 transmission, and with at least one electronic control device
5 for actuating the transmission and the clutch, the method
6 including the steps of:

- 7 a) detecting a quantity that is at least representative of a
8 traveling speed of the vehicle,
- 9 b) detecting an actuation of at least one of a brake and a
10 fuel-metering element,
- 11 c) detecting an operating state of the engine,
- 12 d) detecting whether a current traveling situation indicates
13 a need for engine-braking, and
- 14 e) if the engine is found to be running while the vehicle is
15 found to be traveling at a speed greater than a threshold
16 value, and if at the same time neither the brake pedal nor
17 the fuel-metering element is found to be actuated:
 - 18 - disengaging the clutch if the result of step d) is
19 negative,
 - 20 - preventing disengagement of the clutch if the

21 result of step d) is affirmative.

1 25. The method of claim 24, wherein the need for
2 engine-braking is found by detecting that the motor vehicle is
3 traveling on a downhill grade.

1 26. The method of claim 24, wherein the need for
2 engine-braking is found by detecting that the non-actuated
3 state of the fuel-metering device was preceded by a rapid
4 cutback of the fuel-metering device.

1 27. The method of claim 26, wherein said rapid
2 cutback occurs within a time interval of less than 0.2
3 seconds.

1 28. The method of claim 24, wherein the need for
2 engine-braking is found by detecting that the motor vehicle is
3 being driven in a sport-oriented manner.

1 29. The method of claim 24, wherein the need for
2 engine-braking is found by detecting that a sport-oriented
3 program mode has been selected in a mode-selector device.